June 9, 2008

Ms. Etayenesh (Ty) Asfaw
Environmental Policy Analyst
Water and Wetlands Department
National Association of Home Builders
1201 15th St. NW
Washington, DC 20005

Subject: Analysis of Draft General Construction Permit Risk Factors

Dear Ms. Asfaw:

URS Corporation (URS) is pleased to present this technical memorandum on the analysis of the Draft General Construction Permit Risk Factors. In summary, Sediment Risk factors appear to be calibrated properly; Receiving Water risk factors are skewed high and cause the Project Combined Risk Level to be skewed high. Based on the builder surveys, obtaining risk factor data was difficult to obtain and confusing. Recommendations are provided within the technical memorandum to simplify the risk analysis, clarify risk factor definitions, and to provide better sources for risk factor data.

Sincerely,

URS CORPORATION

Edward F. Othmer Jr., PE, CPESC, CPSWQ
Project Manager

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ASBS	Area of Special Biological Significance
ATS	Active Treatment System
CBIA	California Building Industry Association
COLD	Cold Freshwater Habitat Beneficial Use
CWA	Clean Water Act
GCP	General Construction Permit
GIS	Graphical Information System
K	Soil Erodibility
LS	Hillslope-length Factor, L, and a Hillslope-Gradient Factor, S.
NAL	Numeric Action Level
NOI	Notice of Intent
PRD	Permit Registration Documents
R	Rainfall Erosivity
RARE	Rare and Endangered Species Habitat Beneficial Use
RWQCB	Regional Water Quality Control Board
SPAWN	Fish Spawning Habitat Beneficial Use
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
URS	URS Corporation

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The California State Water Resources Control Board (SWRCB) released the Draft General Construction Permit (GCP) in March 2008. The GCP regulates stormwater runoff from construction sites. To obtain coverage under this General Permit, dischargers must electronically file the Permit Registration Documents (PRDs), which includes a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other compliance related documents required by the GCP and mail the appropriate permit fee to the SWRCB.

Many stakeholders supported the risk-based approach in the Preliminary Draft GCP. As a result, the Draft GCP presents a risk approach that is intended to approximate a project's actual risk of impacting water quality during construction activities.

The Draft GCP contains an approach for estimating both sediment and receiving water risk separately, and an overall risk determination framework that reflects the applicable levels of implementation and monitoring for three risk levels. Projects determined to be Risk Level 4 (the highest risk category) will not be covered by the GCP – individual permits will be needed for these projects.

The project's sediment risk and receiving water risk is calculated using the methodology in Attachment A of the GCP. For any project that spans two or more planning watersheds1, the discharger shall calculate a separate Risk Level for each planning watershed. The discharger shall notify the SWRCB of the project's Risk Level determination(s) and shall include this as a part of the PRDs submittal. If a discharger ends up with more than one Risk Level determination, the Regional Water Board (RWQCB) may choose to break the project in to separate levels of implementation.

1.1.1 Sediment Risk Factor Calculation

Figure 1-1 shows the Sediment Risk Factor Calculation Worksheet that is included in Attachment A of the GCP. The following factors are used to calculate sediment risk, which are based on the Revised Universal Soil Loss Equation (RUSLE):

- Rainfall Erosivity (R);
- Soil Erodibility (K); and
- Topography (LS).

Each of these factors is defined in Attachment A of the Draft GCP. These three factors are multiplied together to determine erosion potential in tons per acre. The Site Sediment Risk Factor is defined as follows:

Low: <1 ton/acre
Medium: >/=1 and <75 tons/acre
High: >/= 75 and <500 tons/acre
Extreme: >/= 500 tons/acre

[1] Planning watershed: defined by the Calwater Watershed documents as a "planning watershed (PWS)," that ranges in size from approximately 3,000 to 10,000 acres http://gis.ca.gov/catalog/BrowseRecord.epl?id=22175.

Figure 1-1: Sediment Risk Factor Worksheet

Sediment Risk Factor Worksheet	Entry
A) R Factor	
Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to http://ei.tamu.edu/ to determine the R factor for the project site.	
R Factor Value	200
B) K Factor (weighted average, by area, for all site soils)	
The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Refer to NRCS soil data (http://websoilsurvey.nrcs.usda.gov/app/) or site-specific data.	
K Factor Value	0.45
C) LS Factor (weighted average, by area, for all slopes)	
The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.	
LS Factor Value	1
Watershed Erosion Estimate (=RxKxLS) in tons/acre	90
Site Sediment Risk Factor Low Sediment Risk: < 1 tons/acre Medium Sediment Risk: >/=1 and <75 tons/acre High Sediment Risk: >/= 75 and < 500 tons/acre Extreme Sediment Risk: >/= 500 tons/acre	**High**

1.1.2 Receiving Water Risk Factor Calculation

Figure 1-2 shows the Receiving Water Risk Factor Calculation Worksheet that is included in Attachment A of the GCP. The following factors are used to calculate receiving water risk:

- Discharge directly or indirectly to a Clean Water Act (CWA) 303(d)-listed water body impaired by sediment;
- Discharge to a water body with designated beneficial uses of COLD or SPAWN;
- Proximity to sensitive receiving waters;
- Channel stability;
- Work within a receiving water; and
- Use of Active Treatment System (ATS).

Each of these factors is defined in Attachment A of the Draft GCP. Scores assigned to each of these factors are added together to determine a total score. The Receiving Water Risk Factor is defined as follows:

Low: <10 points
Medium: >/=10 and <20 points
High: >/= 20 points

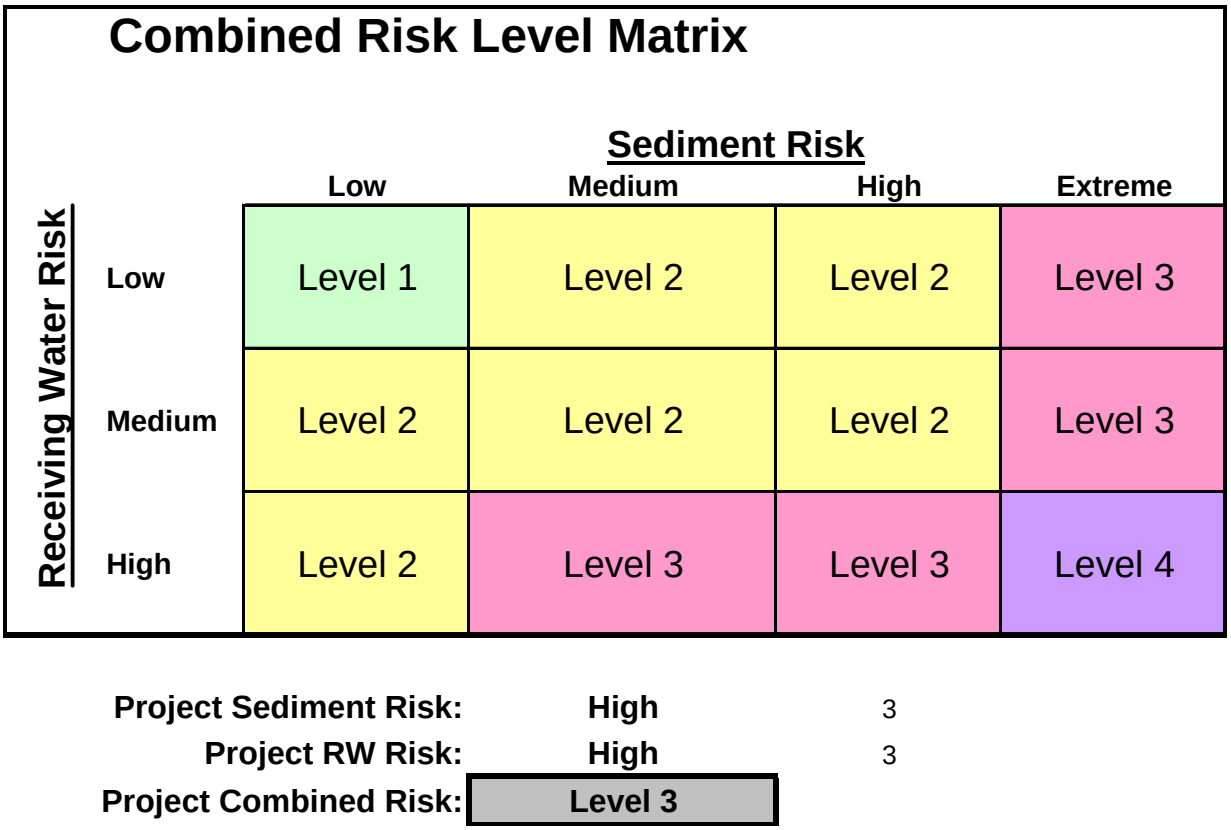
1.1.3 Project Risk Level

Results from the Sediment Risk Level and Receiving Water Risk Level Calculations are used to determine the project's combined risk, as defined in the matrix shown in Figure 1-3.

Figure 1-2: Receiving Water Risk Factor Worksheet

Receiving Water (RW) Risk Factor Worksheet	Scoring	Entry	Score
Instructions: answer all questions and add up points, then determine RW Risk Factor.			
Base Score: 10 points			**10**
A. Watershed Characteristics			
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment**? If answer is "yes," the project is automatically a high receiving water risk project - proceed to "Combined" worksheet. For help with impaired waterbodies please check the attached worksheet or visit the link below: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/tmdl/303d_lists2006approved.html http://atlas.resources.ca.gov/imaps/atlas/app.asp	Yes = 15 points No = 0 points	**Yes**	**15**
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of COLD or SPAWN? http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp	Yes = 10 points No = 0 points	**Yes**	**10**
B. Site Characteristics			
B.1. Is the disturbed area more than the floodprone width[1] or 500 ft (whichever is greater) from sensitive receiving water and discharge is captured and/or attenuated, settled, percolated, or infiltrated allowing for suspended solids reduction prior to entering sensitive receiving water. [2] [1] Floodprone width is the width at twice the bankfull depth. [2] Requires a minimum of 100 ft. of flow through a vegetated buffer prior to discharge	Yes = -5 points No = 0 points	**Yes**	**-5**
B.2. Is the **channel stability index** greater than 10? *(use Channel Stability Index Ranking Worksheet)*	Yes = 5 points No = 0 points	**No**	**0**
B.3. Discharge within water body (WB): Is construction activity located within the sensitive receiving water body? (Please note: other permits and agreements may be required.)	Yes = 5 points No = 0 points	**No**	**0**
B.4. Will the project utilize an Active Treatment System (ATS) operated in compliance with this General Permit to treat ALL the discharges from the site?	Yes = -10 points No = 0 points	**No**	**0**
	Total Score		**30**
	RW Risk Factor		
	Low RW Risk< 10		**High**
	Medium RW Risk >= 10 and < 20		
	High RW Risk>/= 20		

Figure 1-3: Combined Risk Level Matrix



1.2 OBJECTIVE

The objective of this study was to determine if the risk calculation proposed by the SWRCB was properly calibrated (i.e., Project Combined Risk Level normally distributed). In other words, do most sites calculate to be Risk Level 2, and do fewer sites calculate to be Risk Levels 1, 3, and 4.

SECTION 2 METHODOLOGY

URS assessed the project Risk Level calculation using two methods. The first method assessed Risk Level using risk factor data collected from California Building Industry Association (CBIA) projects. The second method assessed project Risk Level calculation using Graphical Information System (GIS) tools combined with various scenarios. Each of these methods is discussed in more detail below.

2.1.1 CBIA Surveys

URS developed a survey form/questionnaire to evaluate the risk level of construction sites (refer to Attachment A). The survey form/questionnaire included questions consistent with the risk factor criteria that are listed in the Draft GCP and other risk factors that may be considered more appropriate to be included in the GCP; a qualitative assessment was also asked. Additionally, the survey form/questionnaire was developed to capture information to calculate site-specific Numeric Action Levels (NALs). The level of difficulty to collect the requisite information was also be tracked.

CBIA distributed the survey form/questionnaire to approximately 20 construction sites that were geographically distributed throughout California. The survey form/questionnaire was populated by construction site staff and/or their consultant. URS received completed survey forms/questionnaires from 14 construction sites.

URS reviewed and summarized the results of the survey forms. URS also independently checked the results of each risk factor. Where appropriate, URS adjusted the risk factor based on best professional judgment. The following assumptions were made when adjusting the risk factor or when a risk factor result was not reported by the construction site:

Sediment Risk Factor:

- R-factor was obtained from http://ei.tamu.edu. The start and end dates of construction (or duration) was based on data recorded on the survey form/questionnaire.
- K-factor was obtained from the Natural Resources Conservation Service (NRCS) soil data (http://websoilsurvey.nrcs.usda.gov/app/) unless site-specific data was provided.
- LS-factor was determined from topographic maps/grading plans provided by the construction site.

Receiving Water Risk Factor:

- If a project was located within a planning watershed (defined by the Calwater Watershed documents as a "planning watershed (PWS)," that ranges in size from approximately 3,000 to 10,000 acres http://gis.ca.gov/catalog/BrowseRecord.epl?id=22175) that was directly adjacent to a CWA 303(d)-listed water body impaired by sediment, then it was considered to discharge directly or indirectly to that listed water body, and was given a score of 15.

- If a project was located within a planning watershed that was directly adjacent to a water body with designated beneficial uses of COLD or SPAWN, then it was considered to discharge to that water body, and was given a score of 10.

- Projects located within 500 feet of a sensitive receiving water were assigned a score of 0.

- Sensitive receiving waters were defined as follows:

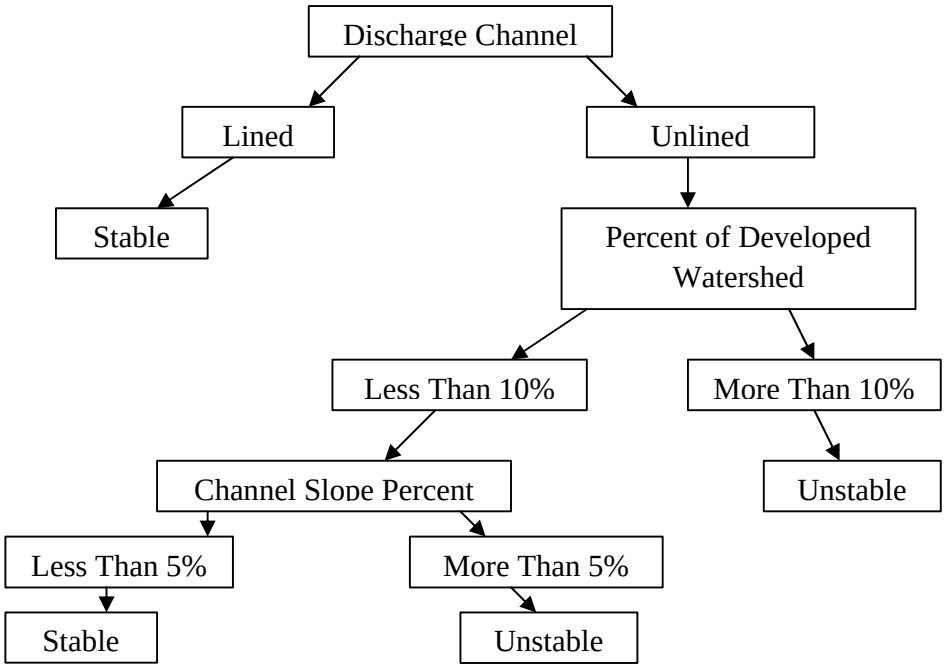
    - All CWA 303(d)-listed receiving waters regardless of impairment;

    - Receiving waters with COLD, SPAWN, or RARE beneficial uses; and

    - Areas of Special Biological Significance (ASBS).

- The channel stability index of a receiving water body is site-specific. URS developed the following flow chart to evaluate whether or not a channel is considered stable. Channels considered unstable were assigned a score of 5.

Figure 2-1: Channel Stability Evaluation Flow Chart



2.1.2 GIS Tools Combined with Various Scenarios

URS produced several GIS exhibits covering the state of California examining the sediment risk factors and receiving water risk factors where possible. A GIS shape file showing areas of probable development was also overlaid onto these figures. Sediment Risk Levels were calculated for both Statewide and areas of probable development.

Sediment Risk Factor:

Sediment risk factor exhibits were produced for R, K, and S (L is project specific; several slope lengths scenarios were evaluated). Information for these GIS exhibits was obtained from the following sources:

- The Draft GCP refers to http://ei.tamu.edu to obtain the R-value. The calculated R-value from this website is based on the Erosivity Index Zone Map and Isoerodent Map of California presented in the EPA Storm Water Phase II Final Rule, Construction Rainfall Erosivity Waiver Fact Sheet 3.1, EPA 833-F-00-014. The source of these maps are from the Agricultural Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE), Chapter 2, pp. 21-64, January 1997. As a result, URS developed R-value maps using these sources for three scenarios: 1) annual R-value; wet season R-value (October through May); and dry season R-value June through September. The annual R-value map is shown in Figure 2-2.

- The K- factor data was obtained from the NRCS soils data website (http://websoilsurvey.nrcs.usda.gov/app/), and is shown in Figure 2-3.

- The average pre-developed slope (S) was assumed to be the same as the average post-developed slope (S), in percent. The slope was determined from a digital terrain model, and is shown in Figure 2-4. The slope length factor, L, is project specific and its definition is graphically shown in Figure 2-5. A number of slope lengths were evaluated including slope lengths of <3 feet, 300 feet, and 1,000 feet. The relationship between L and S are presented in Attachment A to the Draft GCP.

Figure 2-2: R-Value (Annual)

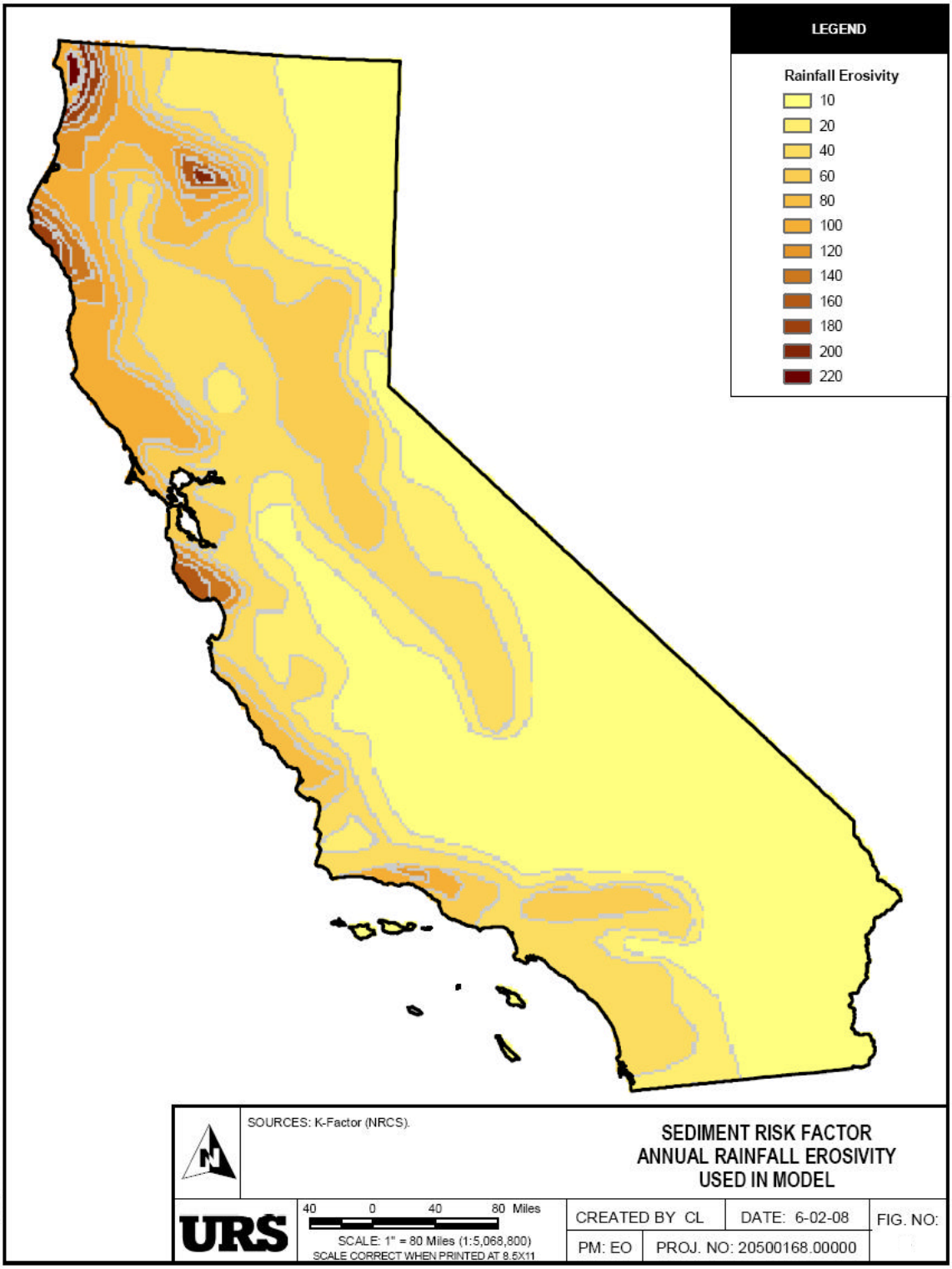


Figure 2-3: K-Factor

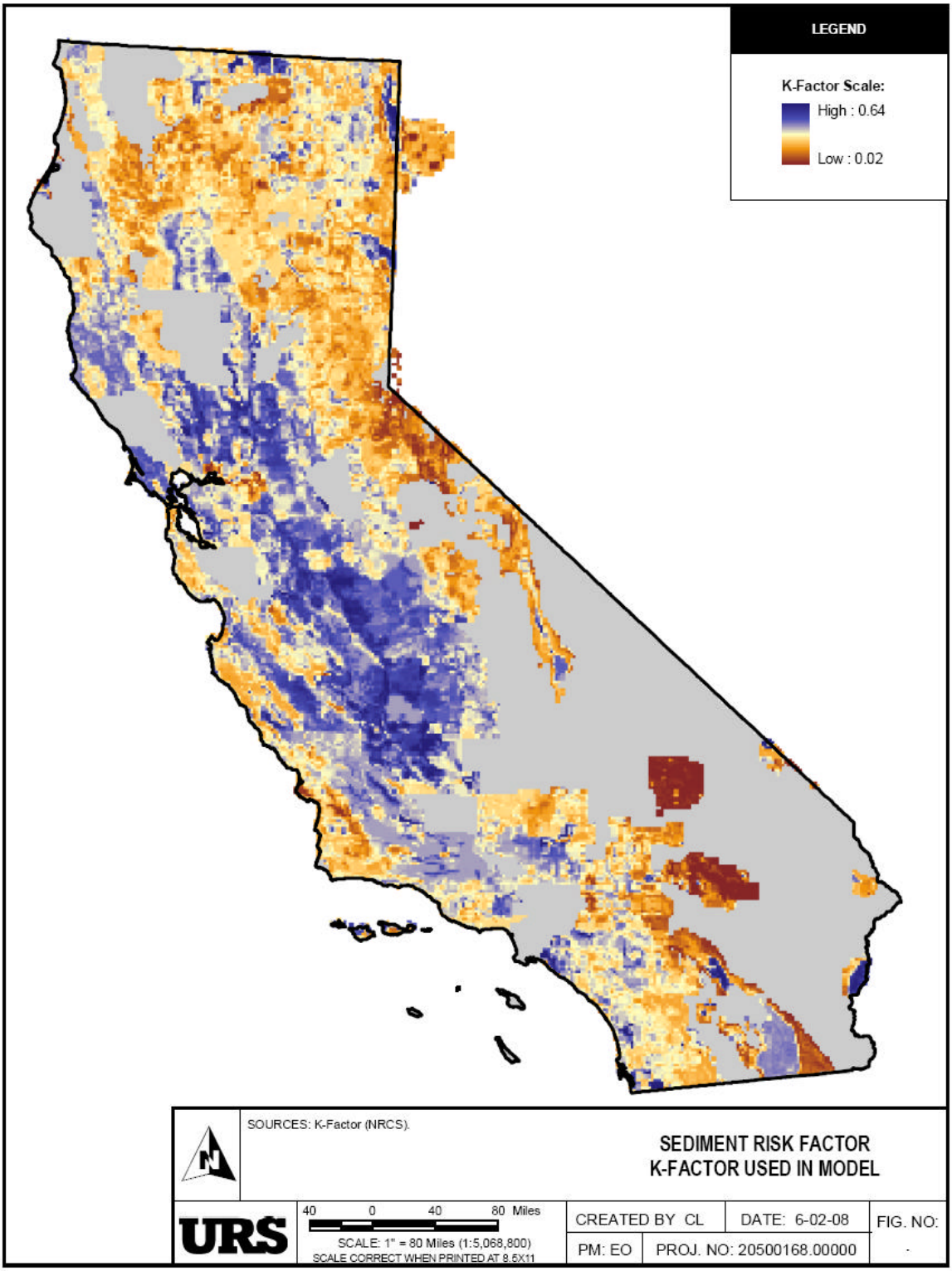


Figure 2-4: Slope (S)

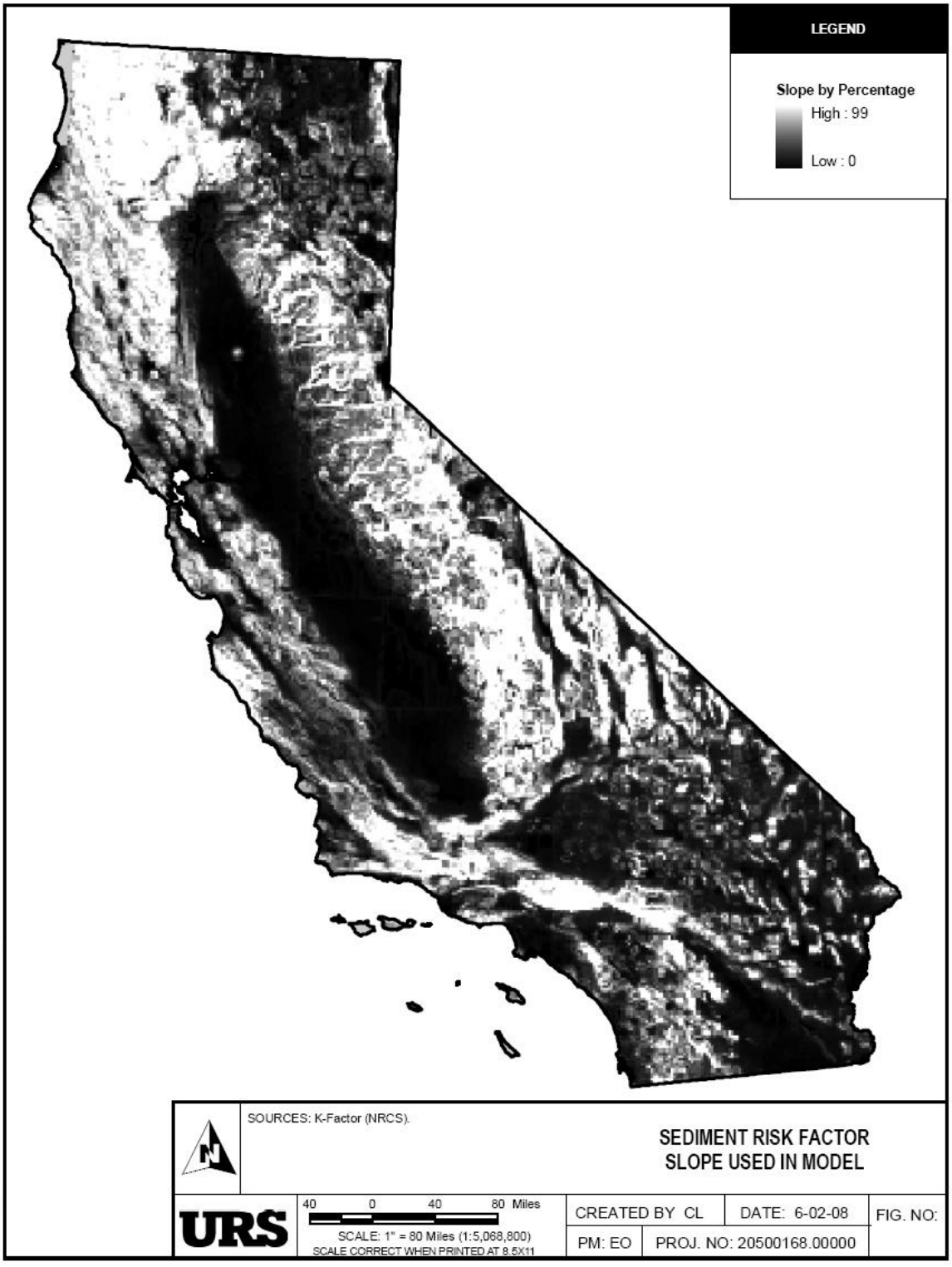
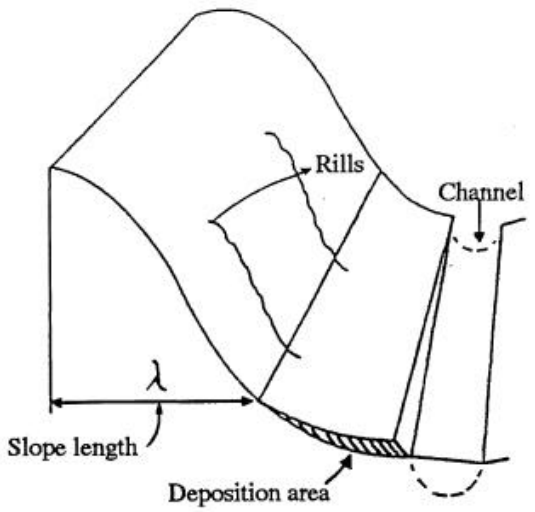


Figure 2-5: Slope Length (L)



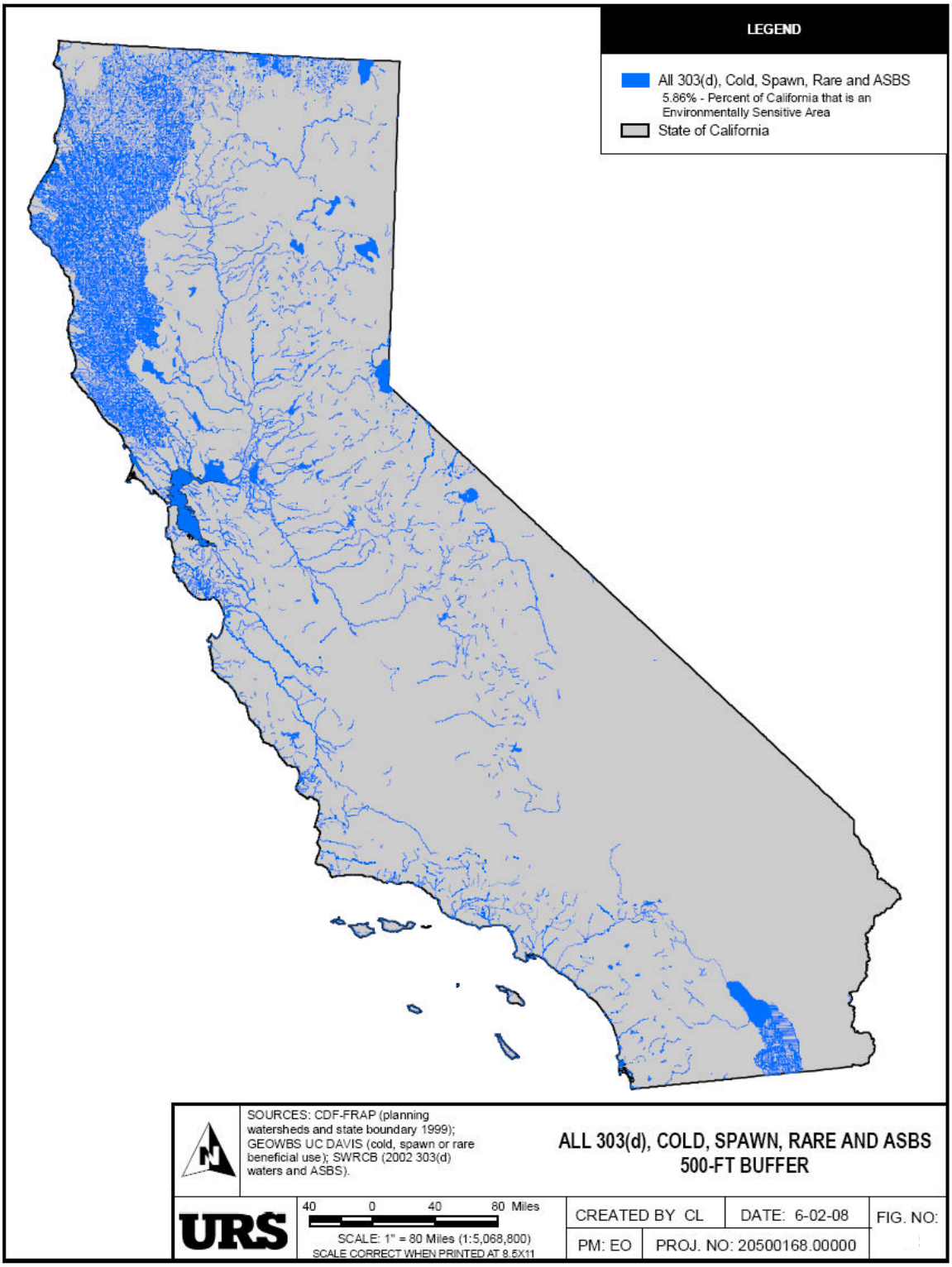
Receiving Water Risk Factor:

URS developed a series of GIS shapefiles and/or matrices (as appropriate) to determine the Receiving Water Risk Factor for the area of probable development. Several of the risk factors (e.g., channel stability index, construction site located within a receiving water body, and use of ATS) cannot be specifically determined through this exercise. As a result, URS developed a series of matrices to calculate the risk factor score based on various scenarios. The same assumptions presented in Section 2.1.1 were applied to this method. The following GIS exhibits were prepared:

- CWA 303(d)-listed receiving waters impaired by sediment (refer to Figure 2-6);
- All CWA 303(d)-listed receiving waters regardless of impairment (refer to Figure 2-7);
- Receiving waters with COLD, SPAWN, or RARE beneficial uses (refer to Figure 2-7); and
- Areas of Special Biological Significance (ASBS) (refer to Figure 2-7).

Figure 2-6: CWA 303(d)-Listed Waters Impaired by Sediment

Figure 2-7: All 303(d), COLD, SPAWN, RARE, ASBS (500-ft Buffer)



SECTION 3 RESULTS

This section summarizes the results of the two methods used to calculate Risk Level.

3.1 CBIA SURVEYS

URS received and summarized the results of survey forms/questionnaires from 14 of the 20 construction sites that were asked to participate in this evaluation. URS also independently checked the results of each risk factor. Where appropriate, URS adjusted the risk factor based on best professional judgment. Table 3-1 summarizes the results of the surveys.

Table 3-1 CBIA Survey Results

			Sediment Risk			Receiving Water Risk			
Builder	**County**	**Size (Acres)**	**Contractor Score**	**URS Score**	**Contractor's Qualitative Assessment**	**Contractor Score**	**URS Score**	**Contractor's Qualitative Assessment**	**Combined Risk**
Builder 2	Los Angeles	695.4	High	Medium	High	Medium	Medium	Medium	Level 2
Builder 5	Fresno	18	Incomplete	Medium	Low	Medium	Low	Low	Level 2
Builder 6	Sacramento	152	Medium	Medium	Medium	Low	Low	Medium	Level 2
Builder 10	Riverside	144	Medium	Medium	Medium	Medium	Medium	Low	Level 2
Builder 12	Riverside	30	Low	Low	Low	High	High	Low	Level 2
Builder 1	Riverside	1048	Incomplete	Medium	High	Incomplete	High	Medium	Level 3
Builder 3	Sonoma	35.4	High	High	Medium	Medium	High	Low	Level 3
Builder 4	Sonoma	20.6	Medium	Medium	Low	High	High	Low	Level 3
Builder 7	El Dorado	32	Extreme	Extreme	Extreme	Medium	Medium	Medium	Level 3
Builder 8	Alameda	21.4	Medium	Medium	Incomplete	Low	High	Incomplete	Level 3
Builder 9	Contra Costa	24	Incomplete	Medium	Incomplete	High	High	Incomplete	Level 3
Builder 11	Orange	42	Medium	Medium	High	High	High	High	Level 3
Builder 13	San Diego	84.8	High	High	Medium	High	High	Low	Level 3
Builder 14	San Diego	443	Medium	Medium	High	High	High	Medium	Level 3

The following statistics can be derived from the table and the supporting surveys:

- R-value was provided for 14 of 14 sites; R-values were not adjusted for any of the sites.
- K-factor was provided for 13 of 14 sites; K-factor was adjusted for 3 of the sites.
- L was provided for 11 of 14 sites; L was adjusted for 4 of the sites.
- S was provided for 12 of 14 sites; S was adjusted for 3 of the sites.
- Determination of discharge to 303(d)-listed water bodies was provided for 14 of 14 sites; determination was adjusted for 1 of the sites.

- Determination of discharge to water body with COLD or SPAWN designation was provided for 14 of 14 sites; determination was adjusted for 3 of the sites.
- Channel stability index was calculated for 6 of 14 sites; channel stability index was estimated for 8 of the sites.
- Sediment Risk was adjusted for 4 of the 14 sites.
- Receiving Water Risk was adjusted for 4 of the 14 sites.
- Qualitative assessment of sediment and receiving water risks did not correlate well with calculated risks.
- Most sites (9 of 14) are Risk Level 3; remaining sites (5 of 14) are Risk Level 2.
- None of the sites were Risk Levels 1 or 4.
- Sediment Risk factors appear to be reasonably calibrated.
- Receiving Water Risk factors are skewed towards High Risk.
- Combined Risk Levels are highly influenced by the Receiving Water Risk factor.

3.2 GIS TOOLS COMBINED WITH VARIOUS SCENARIOS

Sediment Risk Factor:

The sediment risk was calculated for the state for three different slope lengths; a one-year project duration was assumed. The model was also run for those areas of the state where development was probable. Refer to Figures 3-1 through 3-3 for a graphical presentation of the results for slope lengths of <3 feet, 300 feet, and 1,000 feet, respectively.

The following statistics can be derived from the supporting GIS exhibits and results:

- Annual R-value ranges from 10 to 220.
- K-factor was not mapped by NRCS for approximately 48% of the state.
- The K-factor ranges from 0.02 to 0.64.
- The majority of the state and area of probable development are a Medium Sediment Risk Level, regardless of slope length.
- Less than 3 percent of the state and area of probable development are an Extreme Sediment Risk Level.

Figure 3-1: Sediment Risk Factor (L< 3 ft), Annual R-Value

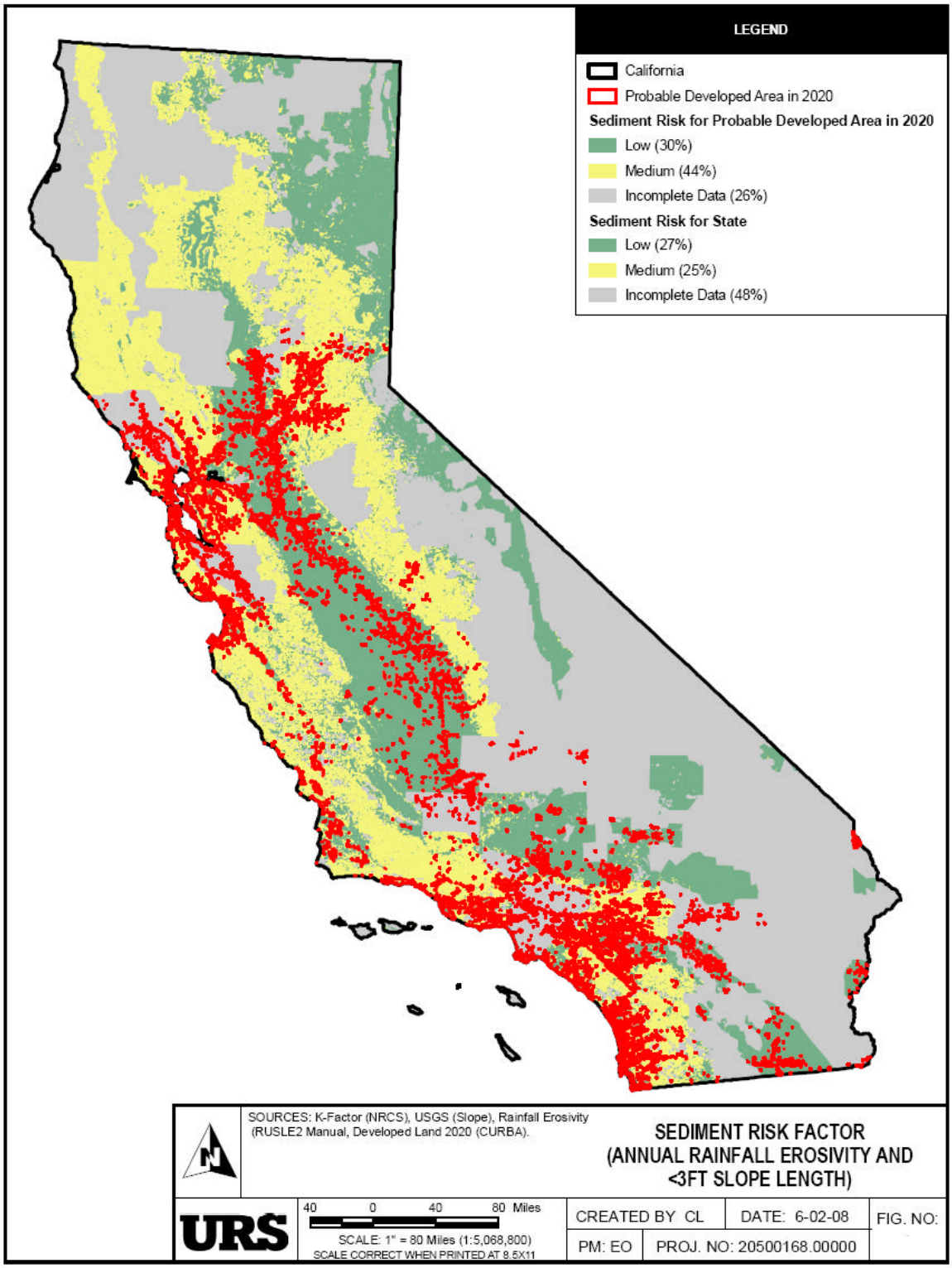


Figure 3-2: Sediment Risk Factor (L=300 ft), Annual R-Value

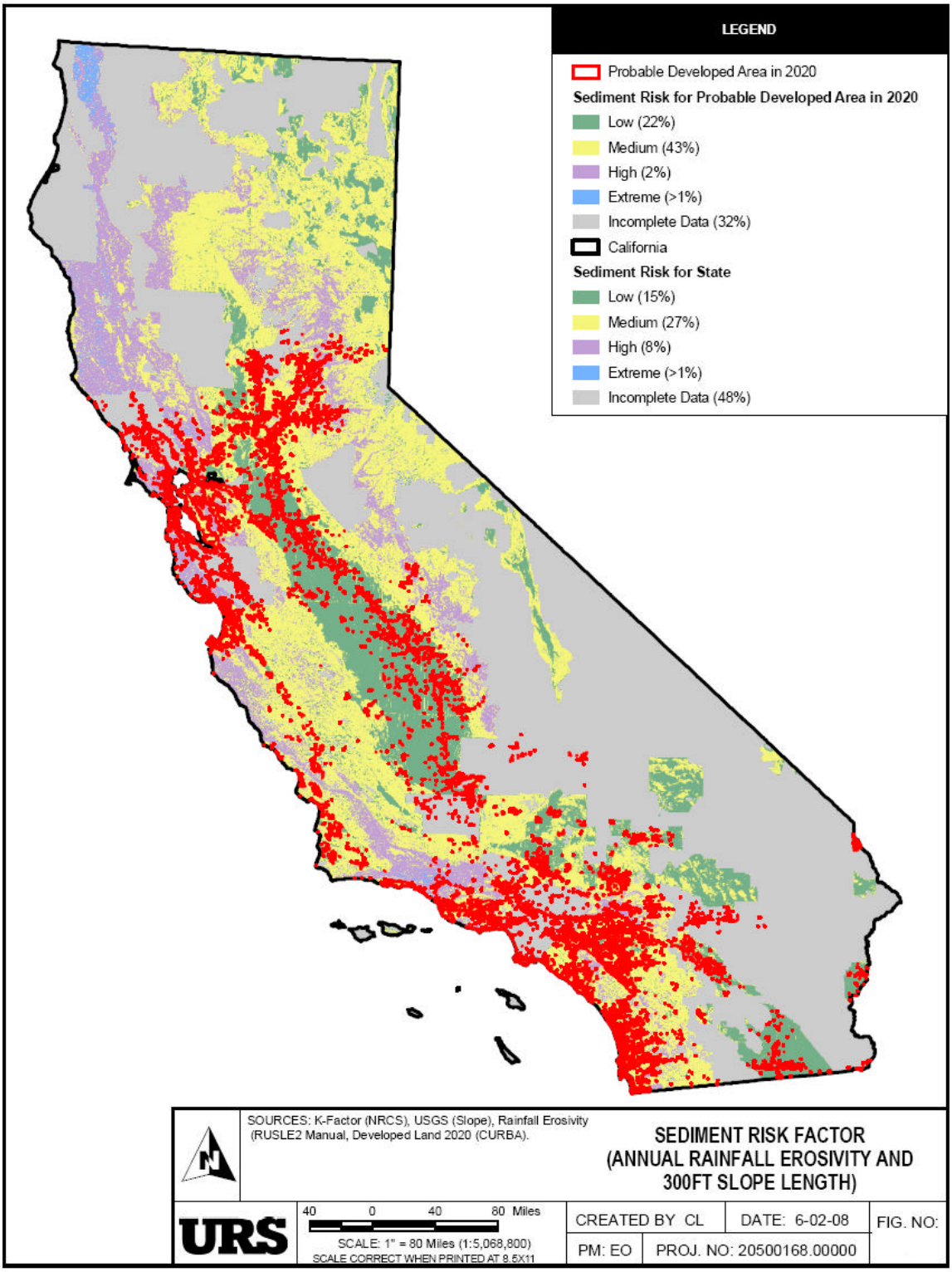
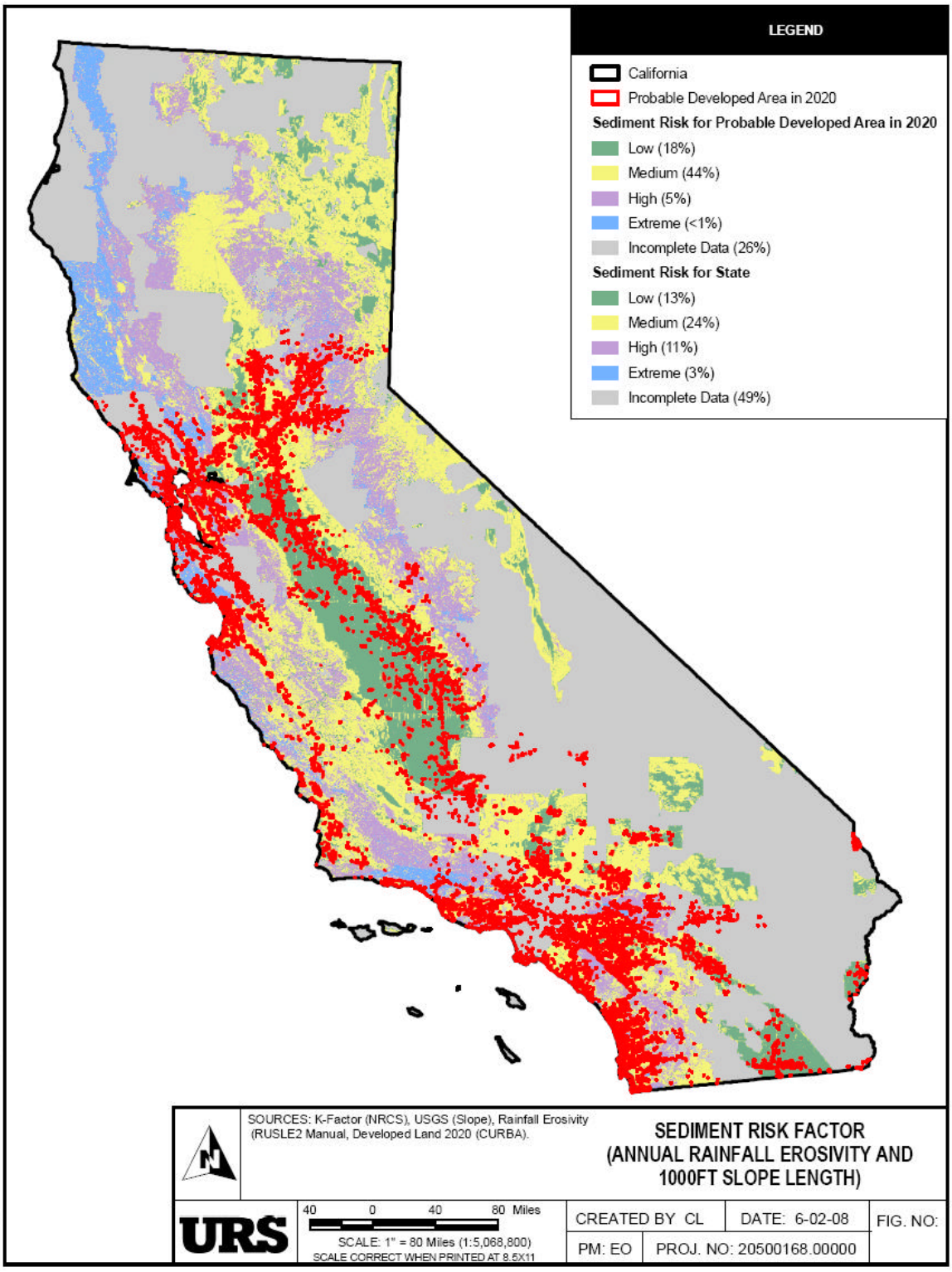


Figure 3-3: Sediment Risk Factor (L=1,000 ft), Annual R-Value



Receiving Water Risk Factor:

Fifty possible receiving water risk scenarios were identified; these are identified in Table 3-2. Coupling the results of the GIS receiving water exhibits with the 50 possible scenarios was not feasible and would not likely yield useful information. However, results contained in Table 3-2 indicate that there is a higher probability of being ranked High Risk vs. Medium and Low.

Table 3-2: Receiving Water Risk Scenarios

Scenario	BASE SCORE	303(d) Listed RW		COLD or SPAWN Listed RW		More Than 500' from Sensitive RW		Channel Stability Index > 10		Within Water Body		Active Treatment System (ATS)		Total	RW Risk
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Points	
1	10	15	0	10	0	-5	0	5	0	5	0	-10	0	45	High Risk
2	10	15	0	10	0	-5	0	5	0	5	0	-10	0	40	High Risk
3	10	15	0	10	0	-5	0	5	0	5	0	-10	0	40	High Risk
4	10	15	0	10	0	-5	0	5	0	5	0	-10	0	35	High Risk
5	10	15	0	10	0	-5	0	5	0	5	0	-10	0	35	High Risk
6	10	15	0	10	0	-5	0	5	0	5	0	-10	0	35	High Risk
7	10	15	0	10	0	-5	0	5	0	5	0	-10	0	35	High Risk
8	10	15	0	10	0	-5	0	5	0	5	0	-10	0	35	High Risk
9	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
10	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
11	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
12	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
13	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
14	10	15	0	10	0	-5	0	5	0	5	0	-10	0	30	High Risk
15	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
16	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
17	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
18	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
19	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
20	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
21	10	15	0	10	0	-5	0	5	0	5	0	-10	0	25	High Risk
22	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
23	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
24	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
25	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk

Scenario	BASE SCORE	303(d) Listed RW		COLD or SPAWN Listed RW		More Than 500' from Sensitive RW		Channel Stability Index > 10		Within Water Body		Active Treatment System (ATS)		Total	RW Risk
26	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
27	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
28	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
29	10	15	0	10	0	-5	0	5	0	5	0	-10	0	20	High Risk
30	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
31	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
32	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
33	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
34	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
35	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
36	10	15	0	10	0	-5	0	5	0	5	0	-10	0	15	Medium Risk
37	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
38	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
39	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
40	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
41	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
42	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
43	10	15	0	10	0	-5	0	5	0	5	0	-10	0	10	Medium Risk
44	10	15	0	10	0	-5	0	5	0	5	0	-10	0	5	Low Risk
45	10	15	0	10	0	-5	0	5	0	5	0	-10	0	5	Low Risk
46	10	15	0	10	0	-5	0	5	0	5	0	-10	0	5	Low Risk
47	10	15	0	10	0	-5	0	5	0	5	0	-10	0	5	Low Risk
48	10	15	0	10	0	-5	0	5	0	5	0	-10	0	0	Low Risk
49	10	15	0	10	0	-5	0	5	0	5	0	-10	0	0	Low Risk
50	10	15	0	10	0	-5	0	5	0	5	0	-10	0	-5	Low Risk

The following statistics can be derived from the supporting GIS exhibits and Table 3-2:

- Approximately 12% of the state discharges to CWA 303(d)-listed water bodies impaired by sediment.
- Approximately 6% of the state is within a 500-foot buffer of sensitive receiving waters.
- 58% of the scenarios are High Risk.

- 28% of the scenarios are Medium Risk.
- 14% of the scenarios are Low Risk.
- Receiving Water Risk factors are skewed towards High Risk.
- Combined Risk Levels are highly influenced by the Receiving Water Risk factor.
- Use of ATS did not reduce High Risk to Medium Risk for 29 scenarios.
- Discharge to a CWA 303(d)-listed water body or receiving water body with a designated beneficial use of COLD or SPAWN causes the site to be High Risk.

SECTION 4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

The survey that was based on the Draft GCP was difficult for contactors to complete. While all contactors included the R-Factor, only 93% of those surveyed included a K factor. Only 71% of those surveyed included information to calculate LS. However, the CSI calculation seemed to cause contractors the most trouble with only 43% including data on it.

Many stakeholders commenting on the Preliminary Draft GCP favored a system where monitoring requirements and possibly effluent limits would be contingent on the relative risk levels for individual sites. Clearly a system for evaluating the risk of a site would be required. However, the system that has been presented in the Draft GCP is incredibly complex, and it appears to place inordinate weight on factors that have little bearing on the overall site risk, while at the same time the model diminishes the importance or even completely ignores many basic risk factors. Basic risk factors not addressed include:

- Size of the site
- Length of time of the active construction phase
- No credit for phasing disturbance and limiting amount of disturbed land present at any one time
- No allowance for limiting disturbance activities to low risk seasons
- No allowance for more detailed evaluation of distance of disturbed activities from the receiving water
- The failure to assign risk credits to any traditional or innovative BMP technology other than an ATS system

The proposed risk assessment system also has the major drawback of being completely beyond the expertise of the average operator to implement, and will require detailed studies subcontracted to teams consisting of hydrologists, geologists, soil scientists, and geomorphologists. This CGP is supposed to regulate construction sites a small as one acre. Such small operators/sites cannot spend the huge cost required to hire experts to perform the type of surveys and evaluations necessary.

In Table 2 of the Draft GCP, a maximum sheet flow length is assigned to various percentage slopes. There are only three categories, and the first category covers the slope range from “0-25%”, where a maximum 20 ft. of sheet flow length is allowed. Several comments on this issue are below regarding the categorical choices in Table 2, and the confusing use of alternative sheet flow lengths in Attachments A and C.

Both Attachment A, the spreadsheet for risk, and Attachment C, the spreadsheet for turbidity, have tables for choosing various sheet flow lengths (the L/S Tables). These Tables list 17 different length ranges, from <3 feet, up to 1000 feet. Only five of the 17 choices are less than 20 feet, and there is no choice that is exactly 20 feet, which is the prescribed length in the Draft Permit for all land with 0-25% slope. If a 20

foot sheet flow is mandated for all L/S, why are the large majority of choices in the models longer than 20 feet, and none equal to 20 feet?

4.2 RECOMMENDATIONS

- The use of the TAMU website certainly simplifies the process but it needs further explanation for what it does and how to use it. The term erosion index needs better definition. If the graphic county function is used the sheet often returns R=0. Furthermore, based on conversations with EPA and TAMU representatives, the website is based on old data and is not maintained. It is recommended that R-Values be obtained from the USDA-NRCS National RUSLE2 Database.

- K factors can be a weakness particularly on projects where the substrate soils are exposed. The K values given for sites in the NRCS web soil survey are for surface soils.
- The LS Factor was confusing to many whom completed the survey form/questionnaire. More prescriptive guidance should be provided to calculate the LS factor.

- The Slope Length Factor (LS) is problematic. The Revised Universal Soil Loss Equation (RUSLE) is a model that predicts slope erosion. As used in this spreadsheet it requires selecting a single LS value to characterize the whole site. On a large complex project trying to characterize LS with a single value is not really possible because erosion, transport and deposition depend so much on location and surface hydraulics. RUSLE2 program has a profile routine that allows the entry of complex slopes and different soil compositions. However, this routine would represent only one section trough the site. While it might be a better characterization of the conditions it still might not represent the real erosion hazard well. The Water Erosion Prediction Program (WEPP) is another option, which provides a means to integrate multiple slope profiles within a single drainage basin and could be a more appropriate tool for this application.
- Credit should be given when the following are implemented:

    - Phasing disturbance and limiting amount of disturbed land present at any one time.

    - Limiting disturbance activities to low risk seasons.

    - Use of traditional or innovative BMP technology other than an ATS system.

    - Self containment or in other words not allowing the site to discharge.

- Following are risk factors that should be considered:

    - Size of the site.

    - Length of time of the active construction phase.

- The channel stability index risk factor should not be included and yields relatively information for the level of effort required to assess its score. Rather, the GCP should work with the five other receiving water risk parameters to develop a more efficient calculation of risk.
- We have found one other State, Vermont, which has formally adopted a risk assessment scheme into their CGP. (Details of the Vermont Risk Evaluation Process are contained in Appendix A to the Vermont CGP.) This plan is certainly not perfect, and certainly needs significant modification to meet the differing circumstances found in California. The Vermont CGP far exceeds the requirements of the EPA CGP, as well as almost all other State CGPs. However, the Vermont style risk assessment has the virtue of being much simpler than that proposed by the SWRCB, and it also addresses many of the omissions from the proposed California Risk Assessment process. Concepts in the Vermont model could be used as the backbone of a suggested risk model, with input from builders as to what specifics they would like to see incorporated into a simpler risk assessment scheme.

Any alternative risk assessment should include the following improvements:

- Sites of five acres or less should be able to be evaluated by a construction person certified in stormwater management, and not require professional scientists and engineers.
- It should also allow risk credits for a range of innovative and effective BMP technologies, not just for ATS.

The following is an attempt to devise a simpler Site Risk Assessment Procedure for the California CGP. It generally follows the outline of the Vermont Risk Assessment Process, but tailors the questions to 1) be more appropriate for California, a much larger and more diverse State, and 2) to include additional factors not included in the original Vermont process that we believe are important in determining overall site risk.

Preliminary Risk Evaluation

1. Is the proposed watershed 303(d) impaired due to sediment, or will there be discharge to a water body with a designated beneficial uses of COLD or SPAWN?
2. Will the project have any stormwater discharges from the construction site to receiving waters that do not pass through a 100 ft. (minimum) vegetated, undisturbed buffer? (Buffer may be located on or off-site, as long as it remains undeveloped for the duration of the permit.)
3. Will any portion of the disturbed area be within 500 ft. or within the flood prone width (whichever is greater) of the receiving water?
4. Will the project have disturbed earth in any one location for more than 7 consecutive calendar days without temporary or final stabilization?
5. Will the project have more than five acres disturbed at any one time?
6. Will the disturbed area include more than 1 acre with a slope of 15% or greater?

If the answer to all of the above questions is "no", then the proposed site automatically qualifies as a low risk project. If the answer to any one question is yes, the operator must proceed to Part 2 of the Risk Evaluation. Note that for a site meeting these criteria, no average soil K value or other complex site evaluation is required.

Detailed Risk Evaluation, Factors Contributing to Risk

This portion of the questionnaire assigns scores for various risk factors that can be determined through normal survey and investigations of a proposed site. The scoring rules for each question immediately follows the question.

1. Will the site, in total, disturb more than 5 acres of soil? (Score: Yes=+10, No=0)

2. Will the site, in total, disturb more than 50 acres of soil? (Score cumulative with Question 1: Yes=+5, No=0)

3. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed water body impaired by sediment? (Score: Yes=15 No=0)

4. Does the disturbed area discharge to a water body with designated beneficial uses of COLD or SPAWN? (Score: Yes=10, No=0)

5. Will the proposed project have earth disturbance within of 100 ft. (horizontal) upslope of any pond or 50 ft. horizontal upslope of any rivers or streams (perennial or seasonal)? (Score: Yes=+5, No=0)

6. Will the project have disturbed earth in any one location for more than 14 consecutive calendar days, without temporary or final stabilization? (Score: Yes=+5, No=0)

7. Will a disturbed area greater than one acre, or greater than 5% of the total disturbed area (whichever is larger), be on soil that has a slope steeper than 15%? (Score: Yes=+5, No=0)

8. Will more than 50% of the disturbed area on the site have a slope greater than 5%, or will the average slope of the disturbed area on the site be greater than 5%? (Score: Yes=+10, No=0)

9. Will the weighted average K factor for the disturbed soils on the site exceed 0.36 (Score: Yes=+5, No=0)

10. Is construction activity located within the sensitive receiving water body? (Please note: other permits and agreements may be required.) (Score: Yes=+5, No=0)

Risk Attenuations

This portion lists various means of risk attenuation. Scores from this section are negative, and deducted from risk points accrued from Part 2.

1. Will the stormwater leaving the construction site pass through at least 100 feet of established vegetated buffer before entering a receiving water, and will disturbed areas have a maximum of seven days pass before temporary or permanent stabilization is implemented? (Score: Yes =-3, No=0)

2. Will all of the disturbed area be further than 500 ft. or outside the flood prone width (whichever is greater) of the receiving water? (Score (Yes=-3, No=0)

3. Will the project be phased so that there are never more than 5 acres of disturbed, unstabilized area at one time? (Note: types of acceptable stabilization can be specified.) (Score: Yes=-5, No=0)

4. Will the project include less than 2 acres of disturbance on soil with an erodibility factor higher than K=0.25? (**Note:** A larger acreage or a percentage and/or different K factor may be more appropriate, but the question could remain the same.) (Score: Yes=-5, No=0)

5. Will the project include less than 2 acres of disturbance on soil that is greater than 5% slope? (Score: Yes=-5, No=0)

6. For arid or semiarid areas with defined wet and dry seasons, will land disturbing activities be limited to the dry season, and either completed to final stabilization or semi-permanently stabilized during the wet season? (Note: types of acceptable stabilization can be specified.) (Score: Yes=-5, No=0)

7. If the site is located in an MS4, will runoff from the site discharge into a common stormwater detention or other treatment system where suspended solids will be removed prior to entering a receiving water, and will the site be in complete compliance with all of the local MS4 provisions? (Score: Yes=-10, No=0)

8. Select **one** of the following, if it is applicable to the site: Will the site be graded and designed with a combination of various BMPs, including infiltration, limiting impervious areas, terracing, slope management, and vegetative buffers, so that A) There will be no runoff from rain events that do not exceed the two year, 24 hour rain event for the site, B) The runoff from the site will not exceed previous use both in quantity and velocity, or C) the percent infiltration or water retention will be at least 85% that of an undeveloped area of similar terrain. (Score: A=-10, B=-7, C=-5, none of the above=0)

9. Will the project utilize an Active Treatment System (ATS) operated in compliance with this General Permit to treat ALL the discharges from the site that can feasibly be collected and directed to the ATS treatment system(s)? (Score: Yes=-12, No=0)

The above is only intended to be a guide, and URS suggests fine tuning may be necessary.

Suggested scoring ranges:

a. Complies with Part 1—Low Risk Site.

b. Score <10 = Low Risk

c. Score 10 to <20 = Medium Risk

d. Score 20 to 30 = High Risk

e. Score >30 = Extreme Risk

Construction Site Risk Evaluation

Site Information*		
1.	Name of Person Completing Survey	
2.	Phone Number:	
3.	Site Name:	
4.	City:	
5.	County:	
6.	Latitude:	
7.	Longitude:	
8.	General description of project (e.g., 500 home subdivision in Los Angeles County; 400 home redevelopment in Anaheim, etc.):	
9.	Overall Project Size (acres):	
10.	Maximum Area of Disturbed Soil (acres) at any one time	
11.	Will the project have disturbed earth in any one location for more than 14 consecutive calendar days without temporary or final stabilization?	☐ Yes ☐ No
12.	Number of locations where storm water leaves the project boundaries (i.e., discharge points):	
13.	Is each discharge point accessible for sampling?	☐ Yes ☐ No
14.	Do you have safe, public access to the receiving water both upstream and downstream of the point where your discharge enters the receiving water, to collect samples?	☐ Yes ☐ No
15.	If no, please describe what prevented access:	☐ Private property ☐ Current owner information not available ☐ No road access ☐ Characteristics of water body (dense vegetation, steep slopes, etc. ☐ Other:_____

Please attach the following:		
16.	Project Vicinity Map	☐ Yes ☐ No
17.	Project Topographical Map (Grading Plan)	☐ Yes ☐ No
18.	Water Pollution Control Drawings (i.e., BMP Plans)	☐ Yes ☐ No
19.	Photographs of Site:	☐ Yes ☐ No

All information collected from this survey will be kept confidential and specific project information will not be released to the State Water Resources Control Board.

Sediment Risk Factor Information

	The following questions are directly from the Draft Construction Permit (Appendix A)		**Degree of Difficulty Answering Question**
20.	What is the erosivity factor "**R**" for the site? *Refer to http://ei.tamu.edu/ to determine the R factor for the project site.*		☐ High ☐ Medium ☐ Low
21.	What is the soil-erodibility factor "**K**" (weighted average, by area, for all site soils) *Refer to NRCS soil data (http://websoilsurvey.nrcs.usda.gov/app/) or site-specific data.*		☐ High ☐ Medium ☐ Low
22.	What is the average Length of Slope (**L**) on the site (ft)?		☐ High ☐ Medium ☐ Low
23.	What is the average Slope Inclination (**S**) on the site (%)?		☐ High ☐ Medium ☐ Low
24.	What is the corresponding area-weighted (**LS**) factor? *Refer to the table shown below.*		☐ High ☐ Medium ☐ Low

Sheet Flow Length (ft) \ Average Watershed Slope (%)	0.2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	25.0	30.0	40.0	50.0	60.0
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.35	0.36	0.38	0.39	0.41	0.45	0.48	0.53	0.58	0.63
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.37	0.41	0.45	0.49	0.56	0.64	0.72	0.85	0.97	1.07
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.38	0.45	0.51	0.56	0.67	0.80	0.91	1.13	1.31	1.47
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.39	0.47	0.55	0.62	0.76	0.93	1.08	1.37	1.62	1.84
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26	0.32	0.40	0.49	0.58	0.67	0.84	1.04	1.24	1.59	1.91	2.19
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36	0.45	0.57	0.71	0.85	0.98	1.24	1.56	1.86	2.41	2.91	3.36
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54	0.70	0.91	1.15	1.40	1.64	2.10	2.67	3.22	4.24	5.16	5.97
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69	0.91	1.20	1.54	1.87	2.21	2.86	3.67	4.44	5.89	7.20	8.37
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82	1.10	1.46	1.88	2.31	2.73	3.57	4.59	5.58	7.44	9.13	10.63
150	0.05	0.09	0.17	0.33	0.50	0.68	0.86	1.05	1.43	1.92	2.51	3.09	3.68	4.85	6.30	7.70	10.35	12.75	14.89
200	0.06	0.10	0.18	0.37	0.57	0.79	1.02	1.25	1.72	2.34	3.07	3.81	4.56	6.04	7.88	9.67	13.07	16.16	18.92
250	0.06	0.10	0.19	0.40	0.64	0.89	1.16	1.43	1.99	2.72	3.60	4.48	5.37	7.16	9.38	11.55	15.67	19.42	22.78
300	0.06	0.10	0.20	0.43	0.69	0.98	1.28	1.60	2.24	3.09	4.09	5.11	6.15	8.23	10.81	13.35	18.17	22.57	26.51
400	0.06	0.11	0.22	0.48	0.80	1.14	1.51	1.90	2.70	3.75	5.01	6.30	7.60	10.24	13.53	16.77	22.95	28.60	33.67
600	0.06	0.12	0.24	0.56	0.96	1.42	1.91	2.43	3.52	4.95	6.67	8.45	10.26	13.94	18.57	23.14	31.89	39.95	47.18
800	0.06	0.12	0.26	0.63	1.10	1.65	2.25	2.89	4.24	6.03	8.17	10.40	12.69	17.35	23.24	29.07	40.29	50.63	59.93
1000	0.06	0.13	0.27	0.69	1.23	1.86	2.55	3.30	4.91	7.02	9.57	12.23	14.96	20.57	27.66	34.71	48.29	60.84	72.15

	The following questions are supplemental to the Draft Construction Permit (Appendix A)	
25.	What is the duration of construction (months)?	
26.	Will construction occur during the wet season (generally defined from October to May)	☐ Yes ☐ No
27.	Will construction occur over multiple wet seasons?	☐ Yes ☐ No

	Construction Phase	**Anticipated Duration**	**Percent of Site Being Actively Graded**
28.	Preliminary Stage (Pre-Construction)		
29.	Mass Grading Stage		
30.	Street and Utilities Stage		
31.	Vertical Construction Stage		
32:	Post-Construction Stage		

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Sediment Risk Factor Information (Continued)				
33.	Please select the soil texture that best describes the site	☐ Sand ☐ Loamy Sand ☐ Sandy Loam ☐ Loam ☐ Silty Loam ☐ Silt ☐ Sandy Clay Loam ☐ Clay Loam ☐ Silty Clay Loam ☐ Sandy Clay ☐ Silty Clay ☐ Clay		
If available, provide the results of ASTM D-422 (particle size analysis) to specify the following percentages:				
34.	What is the % Gravel?			
35.	What is the % Sand?			
36.	What is the % Very Fine Sand?			
37.	What is the % Silt?			
38.	What is the % Clay?			
39.	What % of particles is less than 0.02 mm?			
The following questions are directly from the Draft Construction Permit (Appendix C)				
For Questions 37 through 40 refer to NRCS Web Soil Survey (www. http://websoilsurvey.nrcs.usda.gov/app/), or from the procedures defined in NRCS Technical Release 55 (Urban Hydrology for Small Watersheds)				**Degree of Difficulty Answering Question**
40.	Area of site that is Hydrologic Soil Group A (acres)			☐ High ☐ Medium ☐ Low
41.	Area of site that is Hydrologic Soil Group B (acres)			☐ High ☐ Medium ☐ Low
42.	Area of site that is Hydrologic Soil Group C (acres)			☐ High ☐ Medium ☐ Low
43.	Area of site that is Hydrologic Soil Group D (acres)			☐ High ☐ Medium ☐ Low
44.	What is the 2-year, 24-hour precipitation (inches) *Refer to Western Regional Climate Center (www.wrcc.dri.edu), NRCS Field Offices (http://offices.sc.egov.usda.gov/locator/app?state=ca), or local public works and flood control agencies*			☐ High ☐ Medium ☐ Low
45.	Select the Storm Type that your site is subject to *Refer to NRCS Technical Release 55 (Urban Hydrology for Small Watersheds) for storm types in California - (www.info.usda.gov/CED/ftp/CED/tr55.pdf)*	☐ I ☐ IA ☐ II		☐ High ☐ Medium ☐ Low
46.	Describe the Cover factor "**C**" that best represents the site; *refer to the attached Cover Factor Table*			☐ High ☐ Medium ☐ Low
47.	Describe the Practice factor "**P**" that best represents the site; *refer to the*			☐ High

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	attached Practice Factor Table		☐ Medium ☐ Low
48.	Will detention basins be used to capture the 2-year, 24-hour storm event or 3,600 cubic feet per acre from the entire site, whichever is greater?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
49.	Will runoff from the site be self-contained from the entire site (i.e., ponded and not allowed to discharge)?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low

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COVER FACTOR C VALUES FOR CONSTRUCTION-SITE BMPS

Treatment	C-Factor
Bare soil conditions	
Freshly disked to 6-8 in.	1.00
After one rain	0.89
Loose to 12 in. smooth	0.90
Loose to 12 in. rough	0.80
Compacted root raked	1.20
Compacted bulldozer scraped across slope	1.20
Same except root raked across	0.90
Rough irregular tracked all directions	0.90
Seed and fertilize, fresh, unprepared seedbed	0.64
Same except after 6 months	0.54
Seed, fertilize after 12 months	0.38
Undisturbed except scraped	0.66-1.30
Scarified only	0.76-1.31
Sawdust 2 in. deep, disked in	0.61
Asphalt/Concrete Pavement	0.01
Asphalt emulsion	
1210 gal/acre	0.01-0.019
605 gal/acre	0.14-0.57
302 gal/acre	0.28-0.60
Gravel (Diameter = 25-50 mm) at 90 tons/ac	0.05
Dust binder	
605 gal/acre	1.05
1210 gal/acre	0.29-0.78
Other chemicals	
Aquatain	0.68
Aerospray 70, 10% cover	0.94
PVA	0.71-0.90
Terra-Tack	0.66
Seedings[A]	
Temporary, 0 to 60 days[B]	0.40
Temporary, after 60 days	0.05
Permanent, 2 to 12 months	0.05
Brush	0.35

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PRACTICE FACTOR P VALUES FOR CONSTRUCTION-SITE BMPS

Treatment	P Factor
Bare Soil With No Cover	
Compact and smooth, scraped with bulldozer or scraper up and downhill.	1.3
Same condition, except raked with bulldozer root rake up and downhill.	1.2
Compact and smooth, scraped with bulldozer or scraper across the slope.	1.2
Same condition, except raked with bulldozer root rake across the slope.	0.9
Loose as a disked plow layer.	1.0
Rough, irregular surface equipment tracks in all directions.	0.9
Loose with rough surface greater than 12 inches depth.	0.8
Loose with smooth surface greater than 12 inches depth.	0.9
Sediment Containment Systems (a.k.a. Sediment Trap/Basin)	0.10-0.90[1]
Bale or Sandbag barriers	0.90
Rock (Diameter = 25-50 mm) Barriers at Sump Location	0.80
Silt-Fence Barrier	0.60
Contour Furrowed Surface	
Must be maintained throughout construction activities, otherwise P-factor = 1.00. Maximum length refers to downslope length.	
Slope (%) — Max. Length (ft)	
1 to 2 — 400	0.60
3 to 5 — 300	0.50
6 to 8 — 200	0.50
9 to 12 — 125	0.60
13 to 16 — 80	0.70
17 to 20 — 65	0.80
> 20 — 50	0.80
Terracing	
Must contain 2-year, 24-hour runoff volumes without overflowing, otherwise P-factor = 1.00.	
Slope (%)	
1 to 2	0.12
3 to 8	0.10
9 to 12	0.12
13 to 16	0.14
17 to 20	0.16
> 20	0.18
Grass Buffer Strips to Filter Sediment-Laden Sheet Flows	
Strips must be at least 50 feet wide and have a ground-cover value of 65% or greater, otherwise P-factor = 1.00.	
Basin Slope	
0% to 10%	0.60
11% to 24%	0.80

[1]Should be constructed as the first step in over-lot grading.

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Receiving Water Risk Factor Information			
The following questions are supplemental to the Draft Construction Permit (Appendix A)			**Degree of Difficulty Answering Question**
50.	Identify the receiving water body to which the site drains		☐ High ☐ Medium ☐ Low
51.	Where did you obtain this information from?	☐ Regional Water Quality Control Board Website ☐ USGS ☐ Other:_____	☐ High ☐ Medium ☐ Low
52.	How far is the site from the receiving water?	☐ Less than 1 mile ☐ 1-10 miles ☐ More than 10 miles from site boundary	☐ High ☐ Medium ☐ Low
53.	Does the site discharge directly to the receiving water body (i.e., does not commingle with offsite discharges before entering the receiving water body?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
54.	How does discharge from the site reach the receiving water body?	☐ Open natural channel ☐ Open hardened channel ☐ Through an offsite storm drain system ☐ Overland sheet flow ☐ Other:_____	☐ High ☐ Medium ☐ Low
55.	Does the site discharge to any of the following types of "Environmentally Sensitive Areas"? - Clean Water Act Section 303(d) impaired water body - A water body with a Total Maximum Daily Load (TMDL) - Areas of Special Biological Significance - Water bodies designated with the RARE beneficial use - Areas designated as preserves or their equivalent under the Multi Species Conservation Program - California Coastal Commission's Environmentally Sensitive Habitat	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
56.	Does the receiving water body have a TMDL for sediment, siltation, or turbidity?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low

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Receiving Water Risk Factor Information (Continued)			
The following questions are directly from the Draft Construction Permit (Appendix A)			**Degree of Difficulty Answering Question**
57.	Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed water body impaired by sediment**? *Refer to http://atlas.resources.ca.gov/imaps/atlas/app.asp or http://www.waterboards.ca.gov/tmdl/303d_lists2006approved.html*	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
58.	Does the disturbed area discharge to a water body with designated beneficial uses of **COLD** or **SPAWN**? *Refer to http://www.ice.ucdavis.edu/geowbs/asp/wbquse.asp*	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
59.	Is the disturbed area more than the floodprone width[1] or 500 ft (whichever is greater) from sensitive receiving water and discharge is captured and/or attenuated, settled, percolated, or infiltrated allowing for suspended solids reduction prior to entering sensitive receiving water. [2] [1]Floodprone width is the width at twice the bankfull depth. [2]Requires a minimum of 100 ft. of flow through a vegetated buffer prior to discharge	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
60.	Discharge within water body (WB): Is construction activity located within the sensitive receiving water body?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low
61.	Will the project utilize an Active Treatment System (ATS) operated in compliance with this General Permit to treat ALL the discharges from the site?	☐ Yes ☐ No	☐ High ☐ Medium ☐ Low

Please complete the next series of questions regarding Channel Stability. The following instructions define where you should collect the data.

[1]The length of stream channel to be analyzed depends on the width and length of the channel. Data shall be collected from at least two sites within a distance of 30 bankfull channel widths. The sites shall be located in portions of the channel reach with relatively uniform width and gradient. For example, a 20 foot-wide channel would require data from at least two sites within a 600 foot distance. If sections of channel within the 30 bankfull width distance are immediately upstream or downstream of steps, culverts, grade controls, tributary junctions, or other features and structures that significantly affect the shape and behavior of the channel, a distance of longer than 30 bankfull widths must be analyzed.

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Channel Stability Index Rating (From B.2 Receiving Water Risk Assessment)[1]

						Score (Fill in Shaded Cells)
62. Primary bed material	Bedrock	Boulder/Cobble	Gravel	Sand	Silt Clay	
	0	1	2	3	4	
63. Bed/bank protection	Yes	No	(with)	1 bank protected	2 banks	
	0	1		2	3	
64. Degree of incision (Relative ele. Of "normal" low water; floodplain/terraces @ 100%)	0-10%	11-25%	26-50%	51-75%	76-100%	
	4	3	2	1	0	
65. Degree of constriction (Relative decrease in top-bank width from up to downstream)	0-10%	11-25%	26-50%	51-75%	76-100%	
	0	1	2	3	4	
66. Streambank erosion (Each Bank)	None	Fluvial	Mass Wasting	(failures)		
Left	0	1	2			
Right	0	1	2			
67. Streambank instability (Percent of each bank failing)	0-10%	11-25%	26-50%	51-75%	76-100%	
Left	0	0.5	1	1.5	2	
Right	0	0.5	1	1.5	2	
68. Established riparian woody-vegetative cover (Each bank)	0-10%	11-25%	26-50%	51-75%	76-100%	
Left	2	1.5	1	0.5	0	
Right	2	1.5	1	0.5	0	
69. Occurrence of bank accretion (Percent of each bank with fluvial deposition)	0-10%	11-25%	26-50%	51-75%	76-100%	
Left	2	1.5	1	0.5	0	
Right	2	1.5	1	0.5	0	
70. Stage of channel evolution	I	II	III	IV	V	VI
	0	1	2	4	3	1.5
71. Composition of adjacent side slope	N/A	Bedrock	Boulders	Gravel-SP	Fines	
Left	0	0.5	1	1.5	2	
Right	0	0.5	1	1.5	2	
72. Percent of slope (length) contributing sediment	0-10%	11-25%	26-50%	51-75%	76-100%	
Left	0	0.5	1	1.5	2	
Right	0	0.5	1	1.5	2	
73. Severity of side-slope erosion	None	Low	Moderate	High		
Left	0	0.5	1.5	2		
Right	0	0.5	1.5	2		

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Degree of Difficulty Answering Question: ☐ High ☐ Medium ☐ Low

Overall Questions		
74.	On a scale of 1 to 10 (with 1 being the easiest and 10 being the hardest) How difficult was it to read, understand, and then complete this survey?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
75.	On a scale of 1 to 10 (with 1 being the easiest and 10 being the hardest) How difficult was it to collect the information used in this survey?	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10
76.	How many hours did it take you to complete this survey?	☐ 1 -3 hours ☐ 4-5 hours ☐ 6-10 hours ☐ More than 10 hours
77.	What was the approximate cost for you to complete the survey (please include labor, data gathering, field work, etc.)	
78.	Please describe what you think your Sediment Risk would be:	☐ Low ☐ Medium ☐ High ☐ Exceptional
79.	Please describe what you think your Receiving Water Risk would be:	☐ Low ☐ Medium ☐ High
80.	Are there any other factors regarding risk that you think would be appropriate to consider?	

Thank You!

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